22d to 29th, and 31st; in Oregon on the 3d, 5th, 7th, 8th, 10th, 11th, 16th, 17th, 23d, 25th, 28th, and 29th; in Utah on the 3d to 6th, 15th, 17th to 19th, 21st, and 23d to 31st; in Washington on the 5th, 15th to 18th, and 23d to 25th; and in Wyoming on the 3d, 6th to 12th, 14th, 16th to 19th, 23d, 24th, and 26th to 31st.

MISCELLANEOUS PHENOMENA.

DROUGHT.

The month was very dry, and damage to crops by drought was reported over the greater part of lower Michigan, and in east-central South Dakota, southeast Kansas, south Texas, east Arizona, and northwest Washington. In the early part of the month drought conditions prevailed in parts of east Wisconsin, southern Indiana, southwest Illinois, and parts of Kentucky.

FOREST FIRES.

Destructive forest fires occurred in Chippewa Co., Mich., northern Wisconsin, in Marion, Santa Clara, and Tuolumne counties, Cal., and in the Olympic Mountains near Port Angeles, Wash.

VERIFICATIONS.

FORECASTS FOR 48 HOURS IN ADVANCE.

Appreciating the great importance that long time predictions possess for the general public the Chief of the Weather Bureau has authorized forecasts for 48 and 72 hours, covering the 2d and 3d days in advance. These are optional with the forecast official, and are only made when clearly in the public interest, and cover, in all cases, considerable areas of country, and are not confined to localities.

Percentages of verifications made for second day in advance. Number of predictions made: weather, 135; temperature, 28. Percentages of verifications: weather, 91; temperature, 85; weather and temperature combined, 90.2.

WIND SIGNALS FOR JULY, 1891.

Statement showing percentages of justifications of wind signals for the month of July, 1891.

Wind signals—(Ordered by Professor H. A. Hazen.)—Total number of signals ordered, 65; justified as to velocity, wholly, 39, partly, 2; justified as to direction, 61. All of the signals ordered were cautionary; 25 signals were ordered for easterly winds, of which 22 were justified, and 40 were ordered for westerly winds, of which 39 were justified. Percentage of justifications, 58.9.

No cold-wave signals were ordered, and no temperature-fall warnings were issued during the month.

[Verifications made by Assistant Professor C. F. Marvin, assisted by Mr. H. E. Williams, chief clerk of the Forecast Room.]

FORECASTS FOR 24 HOURS IN ADVANCE.

The forecasts for districts east of the Rocky Mountains for July, 1891, were made by Professor H. A. Hazen, Weather Bureau, and those for the Pacific coast districts were made at San Francisco, Cal., by 1st Lieutenant John P. Finley, 15th Infantry.

Percentages of forecasts verified, July, 1891.

State.	Weather.	Temperature.	Weather and temperature combined.	State.	Weather.	Temperature.	Weather and temperature combined.
Maine	88.7	68.4	80.6	Arkansas	83.2	74.5	79.7
New Hampshire	83.9	76.8	81.1	Tennessee	84.2	79.7	82.4
Vermont	86.5	69.0	79.5	Kentucky	90.6	82.9	87.5
Massachusetts	91.3	73.9	81.3	Ohio	91.6	81.9	87.7
Rhode Island	91.3	76.8	85.5	West Virginia	92.9	75.2	86.4
Connecticut	86.8	71.6	80.7	Indiana	94.2	81.9	89.3
Eastern New York	87.7	69.0	80.2	Illinois	89.4	80.6	85.6
Western New York	82.6	71.3	78.1	Lower Michigan	86.8	81.0	84.5
Eastern Pennsylvania	83.2	66.5	76.5	Upper Michigan	81.9	72.6	78.2
Western Pennsylvania	83.2	80.6	82.2	Wisconsin	86.5	75.2	82.0
New Jersey	79.7	65.8	74.1	Minnesota	90.3	70.0	82.2
Delaware	80.3	78.1	79.4	Iowa	89.7	81.6	86.5
Maryland	82.0	73.5	78.6	Kansas	83.2	73.5	79.3
District of Columbia	77.7	77.4	77.6	Nebraska	87.4	78.4	83.8
Virginia	83.9	77.4	81.3	Missouri	90.3	78.4	85.5
North Carolina	80.6	79.4	80.1	Colorado	89.4	61.6	78.3
South Carolina	86.8	78.1	83.3	North Dakota	88.1	82.9	85.0
Georgia	91.6	88.7	90.4	South Dakota	88.4	77.1	83.9
Eastern Florida	75.8	92.3	82.4	Southern California	98.7	91.0	95.6
Western Florida	85.2	94.5	88.9	Northern California	98.1	87.4	93.8
Alabama	90.0	88.4	89.4	Oregon	93.9	84.9	90.3
Mississippi	88.4	89.4	88.8	Washington	92.3	84.9	89.3
Louisiana	83.2	83.5	83.3				
Texas	88.7	83.9	87.1	Monthly percentage	86.4	77.7	82.9

In determining the monthly percentage of weather and temperature combined, the Pacific coast states are not included. The forecasts of temperature in districts east of the Rocky Mountains for July, 1891, were made with reference to the maximum temperature alone; that is, a prediction of warmer or cooler indicated that the maximum temperature of the day designated would be higher or lower than the maximum of the previous day. The monthly percentage of weather and temperature combined is determined by multiplying the percentage of weather by 6, and the percentage of temperature by 4, and dividing their sum by 10.

STATE WEATHER SERVICES.

[*Temperature in degrees Fahrenheit; precipitation, including melted snow, in inches and hundredths.*]

The following extracts and summaries are republished from reports for July, 1891, of the directors of the various state weather services:

ALABAMA.

Temperature.—The mean was 5.3 below the normal; maximum, 100, at Wiggins, 20th, and at Brewton, 1st; minimum, 50, at Camden, 19th; greatest monthly range, 41, at Camden; least monthly range, 22, at Chepultepec.

Precipitation.—The average was 1.37 above the normal; greatest monthly, 10.05, at Valley Head; least monthly, 1.89, at Fort Deposit.

Wind.—Prevailing direction, east.—*P. H. Mell, Observer, Weather Bureau, Auburn, director.*

ARKANSAS.

Temperature.—The mean was 4.6 below the average; maximum, 103, at Lead Hill, 22d; minimum, 50, at Fayetteville and Rogers, 9th; greatest monthly range, 50, at Lead Hill; least monthly range, 17, at Winslow.

Precipitation.—The average was 4.14 above the normal; greatest monthly, 12.86, at Hot Springs; least monthly, 2.10, at Lead Hill.

Wind.—Prevailing direction, southwest.—*M. F. Locke, Commissioner of Agriculture, Little Rock, director; F. H. Clarke, Observer, Weather Bureau, assistant.*

COLORADO.

Temperature.—Maximum, 102, at Fruita, 24th; minimum, 10, at Breckenridge, 2d; greatest monthly range, 75, at Breckenridge; least monthly range, 31, at Climax.

Precipitation.—Greatest monthly, 8.26, at Brandon; least monthly, 0.28, at Grover.—*W. S. Miller, Observer, Weather Bureau, Denver, director.*

ILLINOIS.

Temperature.—The mean was 5.2 below the normal of the last 16 years;

maximum, 102, at McLeansborough, 22d; minimum, 41, at Philo, 31st.

Precipitation.—The average was 1.21 below the normal; greatest monthly, 4.46, at East Peoria; least monthly, 0.20, at Louisville.

Wind.—Prevailing direction, northwest.—*John Craig, Observer, Weather Bureau, Springfield, director.*

INDIANA.

Temperature.—Maximum, 99, at Mauzy, 13th; minimum, 41, at Delphi, 31st; greatest monthly range, 55, at Mauzy; least monthly range, 30, at Mount Vernon.

Precipitation.—Greatest monthly, 5.70, at Huntingburgh; least monthly, 0.68, at Rockville.

Wind.—Prevailing direction, northwest.—*Prof. H. A. Huston, La Fayette, director; C. F. R. Wappenhans, Observer, Weather Bureau, assistant.*

IOWA WEATHER AND CROP SERVICE.

The month was the coolest July in the last 20 years.

Temperature.—The mean was 6.0 below the normal; maximum, 99, at Stilson, 20th; minimum, 41, at Fayette, 9th, and at Storm Lake, 29th; greatest monthly range, 56, at Stilson; least monthly range, 30, at Independence and McCausland.

Precipitation.—The average was about normal; greatest monthly, 8.20, at Larrabee; least monthly, 1.67, at Bancroft.

Wind.—Prevailing direction, northwest.—*J. R. Sage, Des Moines, director; G. M. Chappel, Observer, Weather Bureau, assistant.*

KANSAS.

Temperature.—The mean was 5.1 below the normal; maximum, 104, at Morton, 10th, and at Macksville, 12th; minimum, 44, at Lakin, 15th; greatest monthly range, 59, at Lakin; least monthly range, 33, at McAllaster.

Precipitation.—The average was 1.61 above the normal; greatest monthly, 11.93, at Kellogg; least monthly, 1.15, at Toronto.

Wind.—Prevailing direction, south.—*Prof. J. T. Lovewell, Topeka, director; T. B. Jennings, Observer, Weather Bureau, assistant.*

KENTUCKY.

Temperature.—The mean was about 6.0 below the normal; maximum, 91, at Bowling Green, 22d; minimum, 47, at Middlesborough, 8th; greatest monthly range, 45, at Frankfort; least monthly range, 35, at Franklin and Canton.

Precipitation.—The average was about 1.00 below the normal; greatest monthly, 4.08, at Louisville; least monthly, 1.08, at Bowling Green.

Wind.—Prevailing direction, northeast.—*Dr. E. A. Grant, Louisville, director; Frank Burke, Observer, Weather Bureau, assistant.*

LOUISIANA.

Temperature.—The mean was slightly below the average; maximum, 101, at Liberty Hill, 3d; minimum, 54, at Lake Charles, 5th; greatest monthly range, 45, at Lake Charles; least monthly range, 20, at Plaquemine and Port Eads.

Precipitation.—The average was nearly double the normal; greatest monthly, 14.77, at Marksville; least monthly, 3.88, at Delhi.

Wind.—Prevailing direction, south.—*George E. Hunt, Observer, Weather Bureau, New Orleans, director.*

MARYLAND.

Temperature.—Maximum, 92, at Kirkwood, Del., 19th; minimum, 51, at Cumberland, 12th; greatest monthly range, 39, at Cumberland; least monthly range, 20, at Jewell.

Precipitation.—Greatest monthly, 12.38, at Barren Creek Springs; least monthly, 5.17, at Cumberland.

Wind.—Prevailing direction, southwest.—*William B. Clark, Johns Hopkins University, Baltimore, director; Milton Whitney, Maryland Agricultural College, secretary and treasurer; C. P. Cronk, Observer, Weather Bureau, in charge.*

MICHIGAN.

Temperature.—The mean was 7.2 below the normal; maximum, 93, at Mottville, 21st; minimum, 29, at Roscommon, 31st.

Precipitation.—The average was 0.88 below the normal; greatest monthly, 4.84, at Mayville; least monthly, 0.10, at Grayling.—*N. B. Conger, Observer, Weather Bureau, Lansing, director.*

MINNESOTA.

Temperature.—The mean was about 5.0 below the normal; maximum, 90, at Grand Meadow, 12th; minimum, 34, at Pokegama Falls, 7th and 25th; greatest monthly range, 51, at Pokegama Falls; least monthly range, 27, at Pine River Dam.

Precipitation.—The average was nearly 1.00 below the normal; greatest monthly, 5.47, at Lake Winnibigoshish; least monthly, 1.15, at Montevideo.

Wind.—Prevailing direction, northwest.—*J. H. Harmon, Observer, Weather Bureau, Minneapolis, director.*

MISSISSIPPI.

Temperature.—The mean was about 3.0 below the normal; maximum, 104, at Columbus, 4th; minimum, 53, at Kosciusko, 18th; greatest monthly range, 48, at Vaiden; least monthly range, 20, at West Point.

Precipitation.—The average was 3.13 above the normal; greatest monthly, 12.80, at Columbus; least monthly, 3.99, at Waynesborough.—*R. B. Fulton, Observer, Weather Bureau, University, director.*

MISSOURI.

Temperature.—The mean was 5.0 below the normal; maximum, 93, at Liberty, 12th; minimum, 40, at Adrian, 7th.

Precipitation.—In the southeast section of the state the average was 3.00 below the normal, while in the northwest and parts of the west-central sections there was an excess of 3.00; greatest monthly, 7.30, at Lamonte (2); least monthly, 0.63, at Mine LaMotte.—*Levi Chubbuck, Secretary of State Board of Agriculture, Columbia, director; A. L. McRae, Observer, Weather Bureau, assistant.*

NEBRASKA.

Cool and cloudy weather interfered with farming operations.

Temperature.—The mean was 5.0 below the normal, and was the lowest mean temperature reported for July since 1882; maximum, 100, at Long Pine; minimum, 32, at Long Pine.

Precipitation.—Greatest monthly, 10.41, at Auburn; least monthly, 2.80, at Brandon.—*Prof. Goodwin D. Swezey, Crete, director; G. A. Loveland, Observer, Weather Bureau, assistant.*

NEVADA.

Temperature.—The mean was about 3.0 below the normal; maximum, 102, at Sodaville; minimum, 26, at Hawthorne.

Precipitation.—The average was about 0.04 above the normal; greatest monthly, 1.52, at Candelaria; least monthly, 0.00, at Hot Springs, Humboldt, Mill City, and Palisade.

Wind.—Prevailing direction, southwest.—*Prof. Charles W. Friend, Carson City, director; F. A. Carpenter, Observer, Weather Bureau, assistant.*

NEW ENGLAND METEOROLOGICAL SOCIETY.

Temperature.—The mean was 3.3 below the normal; maximum, 101, at Farmington, 14th; minimum, 35, at Berlin Falls, 28th; greatest monthly range, 62, at Farmington; least monthly range, 26, at Block Island.

Precipitation.—The average was normal; greatest monthly, 8.82, at Florida; least monthly, 1.62, at Falls Village.

Wind.—Prevailing direction, southwest.—*Prof. William H. Niles, Boston, Mass., president; Prof. Winslow Upton, Providence, R. I., secretary; J. Warren Smith, Observer, Weather Bureau, assistant.*

NEW JERSEY.

Temperature.—The mean was 3.8 below the normal; maximum, 95, at Oceanic, 13th; minimum, 40, at Allaire, 27th; greatest monthly range, 51, at Tenafly; least monthly range, 26, at Atlantic City.

Precipitation.—The average was 0.98 above the normal; greatest monthly, 9.41, at Bridgeton; least monthly, 3.03, at Tenafly.—*R. W. McGann, Observer, Weather Bureau, New Brunswick, director.*

NEW YORK.

Temperature.—The mean was 4.3 below the normal; maximum, 95, at Keene Valley, 13th, and at Wedgewood, 14th; minimum, 36, at Sherman, 26th, and at Brookfield, 27th; greatest monthly range, 57, at Keene Valley; least monthly range, 27, at Fort Hamilton.

Precipitation.—Greatest monthly, 9.15, at Minnewaska; least monthly, 1.51, at Fleming.

Wind.—Prevailing direction, southwest.—*Prof. E. A. Fuertes, Dean of the College of Civil Engineering, Cornell University, Ithaca, director; R. M. Hardinge, Observer, Weather Bureau, assistant.*

NORTH CAROLINA.

The month was cool and wet and decidedly unfavorable for the growth of crops.

Temperature.—The mean was 4.1 below the normal; maximum, 97, at Chapel Hill, 7th; minimum, 42, at Franklin, 9th; greatest monthly range, 48, at Franklin; least monthly range, 19, at Hatteras.

Precipitation.—The average was 1.50 above the normal; greatest monthly, 11.49, at Oak Ridge; least monthly, 3.79, at Charlotte.

Wind.—Prevailing direction, southwest.—*Dr. Herbert B. Battle, Raleigh, director; C. F. von Herrmann, Observer, Weather Bureau, assistant.*

NORTH AND SOUTH DAKOTA.

Temperature.—The mean was about 4.0 below the normal; maximum, 96, at Oelrichs, S. Dak., 5th; minimum, 34, at Flandreau, S. Dak., 23d; greatest monthly range, 60, at Grand Rapids, N. Dak.; least monthly range, 37, at Parkston, S. Dak.

Precipitation.—The average was about normal; greatest monthly, 7.66, at Wild Rice, N. Dak.; least monthly, 0.45, at Saint Lawrence, S. Dak.

Wind.—Prevailing direction, southeast.—*S. W. Glenn, Observer, Weather Bureau, Huron, S. Dak., director.*

OHIO.

Temperature.—The mean was 4.0 below the normal; maximum, 95, at Bangorville and Waverly, 22d, and was the lowest maximum on record for July; minimum, 41, at Wauseon, 27th.

Precipitation.—The average was 0.41 above the normal; greatest monthly, 8.84, at Zanesville; least monthly, 1.48, at Cleveland.

Wind.—Prevailing direction, southwest.—*Prof. B. F. Thomas, Columbus, director; C. M. Strong, Observer, Weather Bureau, secretary and assistant.*

OREGON.

Temperature.—The mean was 0.4 above the normal; maximum, 106, at Pendleton and Weston, 24th; minimum, 31, at Happy Valley, 6th.

Precipitation.—The average was 1.15 above the normal; greatest monthly, 2.98, at Pendleton; least monthly, trace, at Corvallis.

Wind.—Prevailing direction, north.—*Hon. H. E. Hayes, Master State Grange, Portland, director; B. S. Pague, Observer, Weather Bureau, asst.*

PENNSYLVANIA.

Temperature.—The mean was 4.4 below the normal; maximum, 97, at Huntingdon, 14th, and Wilkes Barre, 15th; greatest monthly range, 53, at Huntingdon; least monthly range, 32, at Swarthmore.

Precipitation.—The average was about 2.00 above the normal; greatest monthly, 11.61, at Coatesville; least monthly, 2.63, at Wysox.

Wind.—Prevailing direction, west.—*Under direction of the Franklin Institute, Philadelphia; L. M. Dey, Observer, Weather Bureau, assistant.*

SOUTH CAROLINA.

Temperature.—Maximum, 93, at Brewer Mine, 15th; minimum, 56, at Brewer Mine, 8th, and at Greenwood, 10th; greatest monthly range, 43, at Brewer Mine; least monthly range, 24, at Walhalla.

Precipitation.—Greatest monthly, 9.94, at Hardeeville; least monthly, 2.81, at Winnsborough.

Wind.—Prevailing direction, southwest.—*A. P. Butler, Observer, Weather Bureau, Columbia, director.*

TENNESSEE.

The month was characterized by generally low temperature and an abnormal amount of rainfall.

Temperature.—The mean was 2.4 below the normal, and with the exception of 1883 was the lowest mean on record for July; maximum, 96, at Union City, 21st; minimum, 52, at Hohenwald and Jackson, 9th and 10th, and at Dunlap, 20th; greatest monthly range, 43, at Union City; least monthly range, 26, at Rugby and Greeneville.

Precipitation.—The average was 0.50 above the normal; greatest monthly, 9.91, at Fayetteville; least monthly, 0.95, at Union City.

Wind.—Prevailing directions, south and southwest.—*J. D. Plunket, M. D., Nashville, director; H. C. Bate, Observer, Weather Bureau, assistant.*

TEXAS.

Temperature.—The mean was 1.0 above the normal, except in the eastern part of the state and in the Rio Grande Valley, where it was deficient; maximum, 107, at Menardville, 7th; minimum, 54, at Weatherford, 12th; greatest monthly range, 52, at Weatherford; least monthly range, 23, at Galveston, Brownsville, Brazoria, and Burnet.

Precipitation.—The average was generally deficient, except along the coast, where there was an excess, and over the Panhandle, where it was about normal; greatest monthly, 11.57, at Brazoria; least monthly, 0.00, at Menardville.—*D. D. Bryan, Galveston, director; I. M. Cline, Observer, Weather Bureau, assistant.*

VIRGINIA.

Temperature.—Maximum, 98, at Richmond; minimum, 46, at Lexington.

Precipitation.—Greatest monthly, 8.90, at Norfolk; least monthly, 2.90, at Blacksburgh.—*Dr. E. A. Craighill, Lynchburgh, director; J. N. Ryker, Observer, Weather Bureau, assistant.*

WASHINGTON.

Temperature.—The mean was generally in excess throughout the state; maximum, 108, at Walla Walla, 24th; minimum, 33, at Waterville, 6th; greatest monthly range, 69, at Waterville; least monthly range, 40, at Fort Canby.

Precipitation.—The average was deficient on the coast and Sound and excessive in the eastern part of the state; greatest monthly, 1.83, at Baker City, Oregon; least monthly, 0.05, at Tacoma.

Wind.—Prevailing directions, south and north.—*E. B. Olney, Observer, Weather Bureau, Olympia, director.*

WISCONSIN.

Temperature.—The mean averaged 5 to 10 below the normal, the greatest deficiency being in the cranberry region; maximum, 96, at Beaver Dam and Crandon, 13th; minimum, 33, at Crandon, 20th and 26th, at Florence, 8th and 20th, and at Shawano, 9th.

Precipitation.—The average was below the normal, except in the southeast part of the state where there was a small excess; greatest monthly, 4.63, at Peshtigo; least monthly, 0.84, at Cumberland.—*W. L. Moore, Observer, Weather Bureau, Milwaukee, in charge.*

CONTRIBUTIONS AND ORIGINAL ARTICLES.

SOME EXPERIMENTS IN ATMOSPHERIC ELECTRICITY.

By ALEXANDER MCADIE, M. A.

[Read before Section B (Physics), meeting of American Association for the Advancement of Science, Washington, D. C., August, 1891.]

Some interesting observations of atmospheric electricity have been made this summer at Blue Hill Observatory, Readville, Mass. The location is excellent, as the summit of the hill has an elevation of about 195 metres above mean tide, and is not only the highest land in eastern Massachusetts, but the highest point within ten miles of the coast from Maine to Florida. Continuous observations of the potential of the air at the summit and base were attempted. The base station is 126 metres below the summit and 1,178 metres northwest. Two similar Mascart photographic registers were used, with similar water-droppers. Continuous observations of atmospheric electricity have been made only at a few of the best equipped observatories, and, up to the present time, always with the bifilar suspension. The records, although exceedingly delicate, as a rule show very marked disturbances not due to the electricity of the air: *e. g.*, the variation due to the inconstancy of the suspension. The apparatus can be fairly judged, perhaps, by the discussion which followed Dr. Fine's paper on the variations of atmospheric electricity at Perpignan, read at the Congress of Meteorologists, held in Paris, 1889. These records were begun in 1882, and have been carried on since with all skill and thoroughness. A comparison of these curves obtained at the College de France, by Mascart, since 1881, at the Parc St. Maur, at Greenwich, and elsewhere, in the effort to deduce the normal diurnal variation, makes plain discrepancies and disagreements which are, without doubt, directly due to the apparatus and its installation. In the United States the only observations that I know of, with this apparatus, are those obtained at Baltimore by the United States Signal Service for some three years, and some, for some months, at Worcester, Mass. The chief cause of this paucity of observations is undoubtedly the difficulty of manipulating and the expense of maintaining the photographic register. The expense of the necessary incidentals is considerable, and the various difficulties met in installing the apparatus make it impossible to use the method elsewhere than in a well-equipped observatory. The Mascart self-register requires, for a true record, a dark room, stone piers, constant hygrometric and temperature conditions, and the successful fixing of the record by photography. Observations of the potential of the air are therefore not likely to become general with such apparatus. And, furthermore, it is impossible, where photography is employed, to know what the value of the potential is at any moment. The electrometer for general use, say, for example, for use at the various stations of the Weather Bureau, at experimental stations, etc., must, first of all, be one giving a record that can be easily read at any hour of the day. The above considerations have led to the construction of a new type of electrometer, known as the Multiple Quadrant Electrometer, and a working model has been built, and some tests of its efficiency made. Accompanying curves show records of potential values obtained in this way. The instrument is essentially an enlarged Quadrant Electrometer, with the parts so arranged as to be convenient of access, and instead of the four quadrants, single needle, and bifilar suspension, we use some eighty large quadrants, a needle with twenty blades, and a very fine platinum wire for suspension and directive force. The present instrument has its defects, plenty of them, no doubt; but besides the great advantages of the mechanically registered curve, recording the actual motion of the needle, is the greater one of seeing and getting at any moment the potential of the air, not having to wait 24 hours therefor, and the ability to compare directly these curves with the curves of atmospheric pressure, temperature, humidity, wind direction, wind velocity, cloudiness, etc., as given by self-recording instruments.

Charts obtained, but omitted here:

1. Curves of electrical potential, with pressure, temperature, and relative humidity.
2. Statoscope curve, showing changes in pressure during thunderstorm.
3. Cinemograph curve, showing velocity of wind at each moment during thunderstorm.

FLUCTUATIONS OF TEMPERATURE AND PRESSURE AT THE BASE AND SUMMIT OF MOUNT WASHINGTON.

By Professor H. A. HAZEN, Weather Bureau.

A great deal of interest has been developed in the study and discussion of temperature at mountain stations, both in the United States and abroad.

Continuous observations were maintained at Mount Washington, N. H., by the Signal Service from 1871 to September, 1887, and it is believed that these are the most satisfactory that have ever been taken at a mountain station, since this summit rises 6,279 feet above sea-level, and is crossed by a very large number of storms and high areas. The observations at the base were made by Dr. Hiram Cutting at Lunenburgh, Vt., which is about 1,100 feet above sea-level, and 23 miles distant in a direction nw. by w. from Mount Washington.

At the end of the charts in this REVIEW there are given tracings of the temperature fluctuations at Mount Washington and Lunenburgh, and of pressure at the latter station alone, for the months of January, February, and March, and for the years 1871, 1872, 1873, and 1874.

The pressures are projected from observations made three times each day, without modification, but the diurnal range has been eliminated from the temperature in the following manner: The night observation was projected without change, but to each morning observation there was added the difference between the mean monthly temperature at night and in the morning, while in the afternoon the difference between the means for the month was subtracted from each observation. It is proposed to publish these curves for the observations of at least 12 years.